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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Srinath Hosur et al.

Docket Number: TI-28734

Serial No.: 09/224,401

Art Unit: 2662

Filed: 12/31/1998

Examiner: H. Nguyen

For: Power Control with Space Time Transmit Diversity

CERTIFICATION OF FACSIMILE TRANSMISSION

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FACSIMILE COVER SHEET

X	FACSIMILE COVER SHEET (1 SHEET)		AMENDMENT
	NEW APPLICATION		EOT
	DECLARATION		NOTICE OF APPEAL
	ASSIGNMENT	X	APPEAL Suppl Appeal(12 Pages)
	FORMAL DRAWINGS		ISSUE FEE
	INFORMAL DRAWINGS		REPLY BRIEF (IN TRIPLICATE)
	CONTINUATION APP'N		
	DIVISIONAL APP'N		

NAME OF INVENTOR(S): Srinath Hosur et al.	RECEIPT DATE & SERIAL NO.: **Serial No.: 09/224,401** **Filing Date: 12/31/1998**
TITLE OF INVENTION: Power Control with Space Time Transmit Diversity	
TI FILE NO.: **TI-28734** / DEPOSIT ACCT. NO.: **20-0668**	
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **Hosur et al.** Docket: **TI-28734**

Serial No.: **09/224,401** Examiner: **H. Nguyen**

Filed: **December 31, 1998** Art Unit: **2662**

For: **POWER CONTROL WITH SPACE TIME TRANSMIT DIVERSITY**

APPELLANTS' SUPPLEMENTAL BRIEF

January 2, 2002

CERTIFICATION OF FAX TRANSMITTAL

I hereby certify that the above correspondence is being facsimile transmitted to the Patent and Trademark Office on January 2, 2002.

Gracia Sansom

Gracia Sansom

Comm. of Patents and Trademarks

Washington, D.C. 20231

Dear Sir:

Appellants request reinstatement of their prior appeal under 37 C.F.R. § 1.193(b)(2) and hereby incorporate by reference their Appeal Brief filed on July 30, 2001. In support of their appeal of the Final Rejection of claims in the above-referenced application, Appellants respectfully submit herein their supplemental brief.

1. REAL PARTY IN INTEREST

2. RELATED APPEALS AND INTERFERENCES

3. STATUS OF CLAIMS

4. STATUS OF AMENDMENTS

Appellants mailed a Notice of Appeal on June 25, 2001, and an Appeal Brief on July 25, 2001. Examiner reopened prosecution in response to the Appeal Brief in an Office Action dated October 11, 2001, and set forth a new ground of rejection.

5. SUMMARY OF INVENTION

6. ISSUES

A. Whether Gilhousen et al. (U.S. Patent No. 5,056,109) combined with Kiyanagi et al. (U.S. Patent No. 6,029,056) teach or suggest all limitations of claims 1-8 and 10-28.

B. Whether there is a reasonable expectation that Gilhousen et al. combined with Kiyanagi et al. would succeed in producing the invention of claims 1-8 and 10-28.

C. Whether the prior art provides motivation to combine Gilhousen et al. with Kiyanagi et al. to produce the invention of claims 1-8 and 10-28.

D. Whether CDMA-95 standards teach or suggest the limitations of claim 9.

7. GROUPING OF CLAIMS

Claims 1-8 and 10-16 stand separately as directed to the exemplary embodiment of FIG. 9A and are rejected over Gilhousen et al. in view of Kiyanagi et al.

Claim 9 stands separately as directed to the exemplary embodiment of FIG. 9A and is rejected over an undisclosed reference.

Claims 17-21 stand separately as directed to the exemplary embodiment of FIG. 9B and are rejected over Gilhousen et al. in view of Kiyanagi et al.

Claims 22-24 stand separately as a method of processing signals for exemplary embodiments of FIG. 9A and FIG. 9C and are rejected over Gilhousen et al. in view of Kiyanagi et al.

Claims 25-28 stand separately as a method of processing signals for the exemplary embodiment of FIG. 1 and are rejected over Gilhousen et al. in view of Kiyanagi et al.

8. ARGUMENT

Examiner has rejected claims 1-8 and 10-28 under 35 U.S.C. § 103(a) as being unpatentable over Gilhousen et al. (U.S. Pat. No. 5,056,109) in view of Kiyanagi et al. (U.S. Pat. No. 6,029,056). A *prima facie* case of obviousness requires three things. First there must be some suggestion or motivation to combine the teaching of Gilhousen et al. with Kiyanagi et al. to produce the claimed invention. Second, there must be a reasonable expectation of success of the resulting combination. Third, the combined references must teach or suggest all the claim limitations. MPEP 706.02(j). For the following reasons, the cited references miss all three points. Thus, Appellants respectfully submit that claims 1-28 are allowable under 35 U.S.C. § 103(a).

Examiner concedes that Gilhousen et al. do not disclose the limitations of claim 9. Examiner states that "it is well known in the art to design the measurement circuit, the controller circuit and the estimate circuit on a single integrate [sic] chip as described on CDMA-95 standards." (Office Action dated 10/11/01, page 7). This CDMA-95 standard has not been cited by Examiner as a reference on form PTO-892 nor has any specific section been cited or otherwise provided to Appellants. Thus, Appellants respectfully request that Examiner enter the above CDMA-95 reference on form PTO-892 and formally cite the section which discloses the above limitations of claim 9. Otherwise, Appellants submit that claim 9 is patentable under 35 U.S.C. § 103(a).

A. Failure to teach or suggest all claim limitations

Examiner offers the following basis for the rejection of claims 1-8 and 10-28. (paper 14, page 3).

> **Gilhousen et al.** does not disclose the first input signal and the second input signal are transmitted from different antennas; and the measurement circuit outputs a signal that corresponds to the two input signals. **Kiyanagi et al.** discloses, in Fig. 1, a space diversity receiver that receives input signals S1, S2 from a first and a second antennas (the first input signal and the second input signal transmitted from different antennas respectively). The signals S1 and S2 are combined by the combiner 23 to produce an output signal S3 (the measurement circuit outputs a signal that corresponds to the two input signals).

Claim 1 and depending claims 2-8 and 10-16 recite "a measurement circuit coupled to receive a first input signal from *a first antenna of a transmitter* and coupled to receive *a second input signal from a second antenna of the transmitter* . . . the measurement circuit producing an output signal corresponding to a magnitude of the first and second input signals." Claim 17 and depending claims 18-21 recite "a measurement circuit coupled to receive *a first input signal from a first antenna of a transmitter* at a first time and coupled to receive *a second input signal from a second antenna of the transmitter at a third time*." Claim 22 and depending claims 23-24 recite "*receiving a plurality of input signals being transmitted at a first time*, the plurality of input signals *corresponding to a respective plurality of antennas*." Claim 25 and depending claims 26-28 recite "*producing a transmit power level of each of a plurality of antennas* in response to the control signal; *transmitting a plurality of signals to the external source at a respective said transmit power level* at a second time *from a respective said plurality of antennas*." (emphasis added).

Gilhousen et al. are silent on diversity. Gilhousen et al. fail to teach or suggest plural antennas at either a base or mobile station. Kiyanagi et al. only teach two receive antennas. (col. 1, lines 5-12). The word "transmit" does not appear anywhere in the specification or claims of Kiyanagi et al. Claims 1-8 and 10-28, however, require receiving signals from at least two transmit antennas connected to one transmitter. Appellants respectfully submit, therefore, that the teaching of Kiyanagi et al. is irrelevant to the above issues on appeal. Neither Gilhousen et al. nor Kiyanagi

et al. teach or suggest the above limitations as required by claims 1-8 and 10-28. Thus, a combination of Gilhousen et al. and Kiyanagi et al. fail to teach or suggest all the claim limitations.

B. No reasonable expectation of success of the resulting combination

The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a *reasonable likelihood of success*, viewed in the light of the prior art. *Hodosh v. Block Drug Co.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir.), *cert. denied*, 479 U.S. 827 (1986)(*emphasis added*). The teaching or suggestion to make the claimed combination and the *reasonable expectation of success* must both be found in the prior art, not in the applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)(*emphasis added*). Here, there can be no reasonable expectation of success. Neither reference suggests a problem that would motivate a skilled artisan to combine or modify either reference. No combination of Gilhousen et al. with Kiyanagi et al. produces the claimed invention. Examiner has not suggested how Gilhousen et al. might be combined with Kiyanagi et al. or what additional circuitry might be necessary to produce the invention of claims 1-8 and 10-28. Thus, claims 1-8 and 10-28 are patentable under 35 U.S.C. § 103(a).

C. No suggestion to combine cited references to produce present invention

It is essential that Office personnel find some motivation or suggestion to make the claimed invention in light of the prior art teachings. See e.g., *In re Brouwer*, 77 F.3d 422, 425, 37 USPQ2d 1663, 1666 (Fed. Cir. 1996)("[T]he mere possibility that one of the esters or the active methyl group--containing compounds . . . could be modified or replaced such that its use would lead to the specific sulfoakated resin recited in claim 8 does not make the process in claim 8 obvious 'unless the prior art suggested the desirability of [such a] modification' or replacement.")(quoting *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984); *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991)("[A] proper analysis under § 103 requires, *inter alia*, consideration of . . . whether the prior art would have suggested to those of ordinary skill in the art

that they should make the claimed composition or device, or carry out the claimed process."). Here, there is no suggestion to combine references in either cited reference. Gilhousen et al. are silent on diversity. Kiyanagi et al. are silent on transmit power control. There is no indication that either reference is compatible with the other.

Examiner argues that "it would have been obvious to use the combiner 23 of Kiyanagi et al. in the power control system of Gilhousen et al. in order to receive input signals from different antennas and output a corresponding output signal." (paper no. 14, pages 3-4). Even if such a combination were possible, the resulting combination would be irrelevant to transmit diversity as required by claims 1-8 and 10-28. Examiner's paraphrase ignores the requirement of a transmitter with plural transmit antennas. Thus, claims 1-8 and 10-28 are patentable under 35 U.S.C. § 103(a).

Furthermore, referring to figure 9B, independent claim 17 and depending claims 18-21 recite "a measurement circuit coupled to receive a first input signal from a first antenna (A1) of a transmitter *at a first time* (t_{m1}) and coupled to receive a second input signal from a second antenna of the transmitter *at a third time* (t_{m2}), the measurement circuit producing *a first output signal corresponding to a magnitude of the first input signal* (993) and producing *a second output signal corresponding to a magnitude of the second input signal* (994); and a control circuit coupled to receive the first and second output signals and a reference signal, the control circuit arranged to produce *a first control signal at a second time* (t_{s1}) after the first time in response to a comparison of the first output signal and the reference signal, the control circuit arranged to produce *a second control signal at a fourth time* (t_{s2}) after the third time in response to a comparison of the second output signal and the reference signal." (emphasis added). Examiner has failed to find or conveniently ignored the above claim limitations in either cited reference in the present rejection.

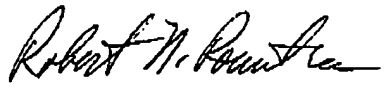
Referring to figure 9C, independent claim 22 and depending claims 23-28 recite "receiving a plurality of input signals being transmitted at a first time, the plurality of input signals corresponding to a respective plurality of antennas; *measuring each input signal* (963, 973) of the plurality of input signals and producing at least one output signal." (emphasis added). Examiner has

failed to find or conveniently ignored the above claim limitation in either cited reference in the present rejection.

In summary, **Examiner has erred** in concluding that a combination of Gilhousen et al. and Kiyanagi et al. teach all the claimed elements. **Examiner has erred** in concluding that a combination of Gilhousen et al. and Kiyanagi et al. would successfully produce the claimed invention. **Examiner has erred** in concluding that either reference suggests a combining Gilhousen et al. with Kiyanagi et al. to produce the claimed invention.

In view of the above, Appellants respectfully request favorable consideration of the appeal from Final Rejection in the above referenced application and its reversal.

Respectfully submitted,



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9. APPENDIX

CLAIMS ON APPEAL

1. A circuit, comprising:

a measurement circuit coupled to receive a first input signal from a first antenna of a transmitter and coupled to receive a second input signal from a second antenna of the transmitter, each of the first and second input signals being transmitted at a first time, the measurement circuit producing an output signal corresponding to a magnitude of the first and second input signals; and

a control circuit coupled to receive the output signal and a reference signal, the control circuit arranged to produce a control signal at a second time in response to a comparison of the output signal and the reference signal.

2. A circuit as in claim 1, wherein each of the first and second input signals comprise at least one pilot symbol.

3. A circuit as in claim 2, wherein each of the first and second input signals is a wideband code division multiple access signal.

4. A circuit as in claim 3, wherein the output signal comprises a sum of the magnitude of each of the first and second input signals and wherein each of the control signal comprises at least one transmit power control signal.

5. A circuit as in claim 3, wherein the output signal comprises a first output signal and a second output signal, the first output signal corresponding to a magnitude of the first input signal and the second output signal corresponding to a magnitude of the second input signal and wherein the control signal comprises at least one transmit power control signal.

6. A circuit as in claim 5, wherein the at least one transmit power control signal comprises a first and a second transmit power control signal, each of the first and second transmit power control signals set to control transmit power of respective said first and second antennas.

7. A circuit as in claim 1, further comprising an estimate circuit coupled to receive at least a first predetermined signal and a second predetermined signal from the transmitter source, each of the first and second predetermined signals having respective predetermined values, the estimate circuit producing the first estimate signal and the second estimate signal in response to the first and second predetermined signals.

8. A circuit as in claim 7, wherein each of the first and second predetermined signals are pilot symbols.

9. A circuit as in claim 8, wherein the measurement circuit, the control circuit and the estimate circuit are formed on a single integrated circuit.

10. A circuit as in claim 8, wherein each of the first and second estimate signals is a Rayleigh fading parameter estimate.

11. A circuit as in claim 8, wherein a total path diversity of each of the first and second symbol estimates is at least twice a number of transmitting antennas.

12. A circuit as in claim 1, wherein the measurement is further coupled to receive a third input signal from a third antenna of the transmitter and coupled to receive a fourth input signal from a fourth antenna of the transmitter, each of the third and fourth input signals being transmitted at the first time, and wherein the output signal further corresponds to a magnitude of the third and fourth input signals.

13. A circuit as in claim 12, wherein each of the input signals comprise at least one pilot symbol.

14. A circuit as in claim 12, wherein each of the input signals is a wideband code division multiple access signal.

15. A circuit as in claim 12, wherein the output signal corresponds to a sum of magnitudes of the input signals.

16. A circuit as in claim 12, wherein the control signal comprises at least one transmit power control signal.

17. A circuit, comprising:

a measurement circuit coupled to receive a first input signal from a first antenna of a transmitter at a first time and coupled to receive a second input signal from a second antenna of the transmitter at a third time, the measurement circuit producing a first output signal corresponding to a magnitude of the first input signal and producing a second output signal corresponding to a magnitude of the second input signal; and

a control circuit coupled to receive the first and second output signals and a reference signal, the control circuit arranged to produce a first control signal at a second time after the first time in response to a comparison of the first output signal and the reference signal, the control circuit arranged to produce a second control signal at a fourth time after the third time in response to a comparison of the second output signal and the reference signal.

18. A circuit as in claim 17, wherein each of the first and second input signals comprise at least one pilot symbol.

19. A circuit as in claim 17, wherein each of the first and second control signals comprise at least one transmit power control signal.

20. A circuit as in claim 17, wherein each of the first and second input signals is a wideband code division multiple access signal.

21. A circuit as in claim 17, further comprising an estimate circuit coupled to receive at least a first predetermined signal and a second predetermined signal from the transmitter source, each of

the first and second predetermined signals having respective predetermined values, the estimate circuit producing the first estimate signal and the second estimate signal in response to the first and second predetermined signals.

22. A method of processing signals for a communication system, comprising the steps of:

receiving a plurality of input signals being transmitted at a first time, the plurality of input signals corresponding to a respective plurality of antennas;

measuring each input signal of the plurality of input signals and producing at least one output signal;

comparing the at least one output signal to a reference signal;

producing at least one control signal in response to the step of comparing; and

transmitting the at least one control signal at a second time.

23. A method of processing signals as in claim 22, further comprising the steps of:

receiving a plurality of predetermined signals from the plurality of antennas; and

producing a channel estimate in response to the plurality of predetermined signals.

24. A method of processing signals as in claim 23, wherein the at least one control signal comprises at least one transmit power control signal and wherein the plurality of predetermined signals comprise pilot symbol signals.

25. A method of processing signals for a communication system, comprising the steps of:

receiving at least one control signal transmitted from an external source at a first time;

producing a transmit power level of each of a plurality of antennas in response to the control signal;

transmitting a plurality of signals to the external source at a respective said transmit power level at a second time from a respective said plurality of antennas.

26. A method of processing signals as in claim 25, wherein the at least one control signal comprises at least one transmit power control signal.

27. A method of processing signals as in claim 26, wherein the respective said transmit power level has a same transmit power adjustment for each of said plurality of antennas in response to one transmit power control signal.

28. A method of processing signals as in claim 26, wherein the at least one transmit power control signal includes a plurality of transmit power control signals, and wherein the respective said transmit power level for each of said plurality of antennas is set by a respective transmit power control signal of the plurality of transmit power control signal.